

Serial No. 09/661,153
Amendment dated June 13, 2005
Reply to Office Action of January 13, 2005

Docket No. UIOWA-0008P4D1

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-7. (Cancelled)

8. (Currently Amended) A drug infusion assembly for microinfusing a drug into the hypothalamus of a patient's brain, comprising:

a plurality of microinfusion catheters disposed non-coaxially side-by-side with respect to one another and configured to be inserted into the hypothalamus of a patient's brain, wherein at least one microinfusion catheter of said plurality of microinfusion catheters comprises a plurality of drug delivery ports arranged such that each drug delivery port of the plurality of drug delivery ports is configured to deliver a drug to a separate site within the hypothalamus;

a macrocatheter for housing the plurality of microinfusion catheters;

a drug delivery manifold, wherein each of said plurality of microinfusion catheters is functionally coupled to said drug delivery manifold;

a drug supply line functionally coupled to said drug delivery manifold; and

a drug reservoir and pump for retaining and for pumping a drug, said drug reservoir and pump being functionally coupled to said drug supply line, wherein said drug

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reservoir and pump are capable of pumping a drug at a variable rate, and the variable rate can be controlled percutaneously.

9. (Previously Presented) The drug infusion assembly as claimed in claim 8, wherein said macrocatheter includes a magnetic unit, said magnetic unit being configured such that application of an external magnetic field allows for stereotactic placement of said macrocatheter to a specific location within the patient's brain.

10. (Previously Presented) The drug infusion assembly as claimed in claim 8, wherein said macrocatheter includes a magnet located at a distal end of said macrocatheter.

11. (Cancelled)

12. (Previously Presented) The drug infusion assembly as claimed in claim 8, wherein said drug reservoir and pump are capable of pumping a drug at a variable rate.

13. (Cancelled)

14. (Previously Presented) The drug infusion assembly as claimed in claim 8, wherein said drug reservoir and pump include a recharge valve for recharging said drug reservoir and pump with a drug.

15. (Original) The drug infusion assembly as claimed in claim 14, wherein said recharge valve is accessible percutaneously.

16-40. (Cancelled)

41. (Previously Presented) The drug infusion assembly as claimed in claim 8, wherein the drug reservoir and pump contains and supplies an appetite controlling drug for treating obesity.

42. (Previously Presented) The drug infusion assembly as claimed in claim 8, wherein at least one microinfusion catheter of the plurality of microinfusion catheters is configured such that each of the plurality of drug delivery ports can be independently controlled.

43. (Previously Presented) The drug infusion assembly as claimed in claim 8, further comprising monitoring electrodes which sense electrical activity within the patient's hypothalamus.

44. (Previously Presented) The drug infusion assembly as claimed in claim 43, wherein the at least one microinfusion catheter of the plurality of microinfusion catheters is configured to independently deliver a drug from each of the plurality of drug delivery ports of the at least one microinfusion catheter based on information gathered from the monitoring electrodes.

45-51. (Cancelled)

52. (Previously Presented) The drug infusion assembly of claim 8, wherein the plurality of drug delivery ports is disposed along a length of the at least one microinfusion catheter.

53. (Currently Amended) A drug infusion device, comprising:
a macrocatheter;
a plurality of microinfusion catheters extending through the macrocatheter and movably disposed non-coaxially side-by-side with respect to one another, wherein each of the plurality of microinfusion catheters is configured to receive a drug, and wherein an end portion of each of the plurality of microinfusion catheters is configured to extend beyond an end of the macrocatheter so as to infuse the drug into the hypothalamus of a patient;

a pump configured to controllably supply a drug to the plurality of microinfusion catheters; ~~and~~

a manifold configured to convey the drug from the pump to the plurality of microinfusion catheter; and

at least one electrode configured to sense electrical activity of the hypothalamus, wherein the pump is configured to communicate with the at least one electrode and supply the drug to at least one of the plurality of microinfusion catheters in accordance with the electrical activity of the hypothalamus.

54-55. (Cancelled)

56. (Previously Presented) The drug infusion assembly of claim 53, wherein the pump can be controlled percutaneously.

57. (Previously Presented) The drug infusion assembly of claim 53, wherein at least one microinfusion catheter comprises multiple individually controllable drug delivery ports disposed along a length of the at least one microinfusion catheter.

58. (Cancelled)

59. (Previously Presented) The drug infusion assembly of claim 53, wherein the macrocatheter comprises a magnet.

60-61. (Cancelled)

62. (Previously Presented) The drug infusion assembly of claim 53, wherein the drug is configured to affect the weight of the patient.

63. (Previously Presented) A drug infusion device, comprising:
a plurality of microinfusion catheters disposed non-coaxially side-by-side with respect to one another and configured to receive a drug and infuse the drug into a tissue of a patient, wherein at least one microinfusion catheter comprises a plurality of individually controllable drug delivery ports disposed along a length of the at least one microinfusion catheter; and

a macrocatheter configured to house the plurality of microinfusion catheters.

64. (Previously Presented) The drug infusion device of claim 63, wherein the tissue comprises the hypothalamus.

65-66. (Cancelled)

67. (Previously Presented) The drug infusion assembly of claim 63, wherein the macrocatheter comprises a magnet configured to cooperate with an external magnetic field to guide the macrocatheter.

68. (Previously Presented) A drug infusion assembly comprising the drug infusion device of claim 63, and further comprising a pump configured to deliver the drug to at least one microinfusion catheter of the plurality of microinfusion catheters.

69. (Previously Presented) The drug infusion assembly of claim 68, wherein the pump is configured to be controlled percutaneously.

70. (Previously Presented) The drug infusion assembly of claim 68, further comprising a manifold configured to convey the drug from the pump to the at least one microinfusion catheter.

71. (Currently Amended) A drug infusion device, comprising:
a macrocatheter, comprising a magnet configured to aid in the stereotactic placement of the macrocatheter, wherein the magnet comprises a magnetic collar disposed on the macrocatheter proximate to an end of the macrocatheter; and

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a plurality of microinfusion catheters disposed non-coaxially side-by-side within the macrocatheter, wherein at least one of said plurality of microinfusion catheters comprises a plurality of drug delivery ports and is configured to receive a drug and infuse the drug into a tissue of a patient, and wherein at least one of said plurality of microinfusion catheters is movable within said macrocatheter.

72. (Previously Presented) The drug infusion device of claim 71, wherein the plurality of drug delivery ports comprises individually controllable drug delivery ports.

73. (Previously Presented) The drug infusion device of claim 71, wherein the plurality of drug delivery ports are disposed along a length of the at least one microinfusion catheter.

74. (Cancelled)

75. (Currently Amended) The drug infusion device of claim ~~74~~71, wherein the plurality of drug delivery ports comprises individually controllable drug delivery ports.

76. (Cancelled)

77. (Previously Presented) A drug infusion assembly comprising the drug infusion device of claim 71, and further comprising at least one pump configured to controllably supply the drug to the at least one microinfusion catheter.

78. (Previously Presented) The drug infusion assembly of claim 77, wherein the at least one pump is configured to be controlled percutaneously.

79. (Previously Presented) The drug infusion assembly of claim 77, further comprising a manifold configured to convey the drug from the at least one pump to the at least one microinfusion catheter.

80. (Previously Presented) A drug infusion assembly for microinfusing a drug into the hypothalamus of a patient's brain, comprising:

a plurality of microinfusion catheters disposed non-coaxially side-by-side with respect to one another and configured to be inserted into the hypothalamus of a patient's brain, wherein at least one microinfusion catheter of said plurality of microinfusion catheters comprises a plurality of drug delivery ports arranged to deliver a drug to a separate site within the hypothalamus;

a drug delivery manifold, wherein each of said plurality of microinfusion catheters is functionally coupled to said drug delivery manifold;

a drug supply line functionally coupled to said drug delivery manifold; and
a drug reservoir and pump for retaining and pumping a drug, said drug reservoir and pump being functionally coupled to said drug supply line, wherein said drug reservoir and pump includes a recharge valve for recharging said drug reservoir and pump with a drug.

81. (Previously Presented) The drug infusion assembly as claimed in claim 80, wherein said recharge valve is accessible percutaneously.

82. (Previously Presented) A drug infusion assembly for microinfusing a drug into the hypothalamus of a patient's brain, comprising:

a plurality of microinfusion catheters disposed non-coaxially side-by-side with respect to one another and configured to be inserted into the hypothalamus of a patient's brain, wherein at least one microinfusion catheter of said plurality of microinfusion catheters comprises a plurality of drug delivery ports arranged to deliver a drug to a separate site within the hypothalamus;

a drug delivery manifold, wherein each of said plurality of microinfusion catheters is functionally coupled to said drug delivery manifold;

a drug supply line functionally coupled to said drug delivery manifold; and

a drug reservoir and pump for retaining and pumping a drug, said drug reservoir and pump being functionally coupled to said drug supply line, wherein at least one microinfusion

catheter of the plurality of microinfusion catheters is configured such that each of the plurality of drug delivery ports can be independently controlled.

83. (Currently Amended) A drug infusion assembly for microinfusing a drug into the hypothalamus of a patient's brain, comprising:

a plurality of microinfusion catheters disposed non-coaxially side-by-side with respect to one another and configured to be inserted into the hypothalamus of a patient's brain, wherein at least one microinfusion catheter of said plurality of microinfusion catheters comprises a plurality of drug delivery ports arranged to deliver a drug to a separate site within the hypothalamus;

a drug delivery manifold, wherein each of said plurality of microinfusion catheters is functionally coupled to said drug delivery manifold;

monitoring electrodes that sense electrical activity within the patient's hypothalamus;

a drug supply line functionally coupled to said drug delivery manifold; and

a drug reservoir and pump for retaining and pumping a drug, said drug reservoir and pump being functionally coupled to said drug supply line, wherein the at least one microinfusion catheter is configured to independently deliver a drug from each of the plurality of drug delivery ports based on information gathered from the monitoring electrodes.

84. (Cancelled)

85. (Previously Presented) A drug infusion device, comprising:

a plurality of microinfusion catheters disposed non-coaxially side-by-side with respect to one another and configured to receive a drug and infuse the drug into the hypothalamus of a patient;

a pump configured to controllably supply a drug to the plurality of microinfusion catheters; and

a manifold configured to convey the drug from the pump to the plurality of microinfusion catheters, wherein at least one microinfusion catheter comprises multiple individually controllable drug delivery ports disposed along a length of the at least one microinfusion catheter.

86. (Currently Amended) A drug infusion device, comprising:

a plurality of microinfusion catheters disposed non-coaxially side-by-side with respect to one another and configured to receive a drug and infuse the drug into a hypothalamus of a patient;

at least one electrode configured to sense electrical activity of the hypothalamus;

a pump configured to controllably supply a drug to the plurality of microinfusion catheters, wherein the pump is configured to communicate with the at least one electrode and

supply the drug to at least one of the plurality of microinfusion catheters in accordance with the electrical activity of the hypothalamus; and

a manifold configured to convey the drug from the pump to the plurality of microinfusion catheters.

87. (Cancelled)

88. (Previously Presented) A drug infusion device, comprising:

a macrocatheter; and

a plurality of microinfusion catheters disposed non-coaxially side-by-side within the macrocatheter, wherein at least one microinfusion catheter comprises a plurality of drug delivery ports and is configured to receive a drug and infuse the drug into a tissue of a patient, and wherein the plurality of drug delivery ports comprises individually controllable drug delivery ports.

89. (Currently Amended) A drug infusion device, comprising:

a macrocatheter; and

a plurality of microinfusion catheters disposed non-coaxially side-by-side within the macrocatheter, wherein at least one microinfusion catheter of the plurality of microinfusion catheters is movable and comprises a plurality of individually controllable drug delivery ports

~~and, wherein the at least one microinfusion catheter~~ is configured to receive a drug and infuse the drug into a tissue of a patient, and wherein the macrocatheter comprises a magnet configured to aid in the stereotactic placement of the macrocatheter in the tissue.

90. (Cancelled)

91. (Previously Presented) The drug infusion assembly of claim 89, wherein the magnet comprises a magnetic collar disposed on the macrocatheter proximate to an end of the macrocatheter.

92. (Previously Presented) A drug infusion device, comprising:
a macrocatheter;
a plurality of microinfusion catheters disposed non-coaxially side-by-side within the macrocatheter, wherein at least one of said plurality of microinfusion catheters comprises a plurality of drug delivery ports and is configured to receive a drug and infuse the drug into a tissue of a patient; and
at least one pump configured to controllably supply the drug to the at least one microinfusion catheter, wherein the at least one pump is configured to be controlled percutaneously.

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93. (Cancelled)

94. (Previously Presented) The drug infusion assembly of claim 92, further comprising a manifold configured to convey the drug from the at least one pump to the at least one microinfusion catheter.

95. (Previously Presented) The drug infusion assembly as claimed in claim 8, wherein said drug reservoir and said pump comprise a combined drug reservoir and pump.

96. (Previously Presented) The drug infusion assembly as claimed in claim 80, wherein said drug reservoir and said pump comprise a combined drug reservoir and pump.

97. (Previously Presented) The drug infusion assembly as claimed in claim 82, wherein said drug reservoir and said pump comprise a combined drug reservoir and pump.

98. (Previously Presented) The drug infusion assembly as claimed in claim 83, wherein said drug reservoir and said pump comprise a combined drug reservoir and pump.